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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 982,791	10/22/2001	Hiroiyuki Hakamata	57454-271	8395

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EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 05/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,791

Applicant(s)

HAKAMATA ET AL.

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 4-5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fatula (US 6,278,210) in view of Guers (US 4,688,951). Fatula teaches a wireless power transfer apparatus (Fig.1) including a bearing (not shown, c.5, lines 12-13), a non-contact signal transfer mechanism transmitting a signal from a rotary shaft (shaft/thief assembly) 34/16 to a fixed shaft (stationary head assembly) 30 comprising a power generation circuit generating power between said rotary shaft and said fixed shaft, said power generation circuit comprising a power feed coil 50 (Fig.2) wound around a yoke (primary core element) 48 provided at said fixed shaft 30, and a power receiving coil 54 wound around a yoke (secondary core element) 52 provided at said rotary shaft 34, wherein a magnetic path is formed between the yoke 48 of said fixed shaft and the yoke 52 of said rotary shaft to provide a current flow to said power receiving coil 54 (c.6, lines 13-17); a power supply circuit (not shown, c.6, lines 13-17) for supplying an alternating current to said power feed coil 50; and a power receiving circuit (AC-DC convertor) 56 for receiving said alternating current through said power receiving coil 54 to rectify the received current (c.6, lines 17-19).

Fatula teaches a battery 58 which receives power from receiving coil 54, as well as a controller 24/26 "responsive to the power generated by said power generation circuit". However, Fatula differs in that controller 24/26 does not include "a signal transfer circuit

configured to...transfer a signal from said rotary shaft to said fixed shaft" or "a sensor" receiving power from power receiving coil.

Guers teaches a roller bearing with contactless transmission of energy signals including a signal transfer (or "transmission") circuit comprising a rotating deflector 6 consisting of a winding 11 and a stationary deflector/probe 5/8 (right side of bearing, Fig.1) which transfers a signal from the rotary inner ring 2 to stationary outer ring 1 as a function of the detected magnetic field (c.2, line 67-c.3, line 2). The probe 8 comprises a sensor "whose instantaneous value is...the image of the physical magnitude sensed" (c.1, lines 63-64). The physical magnetide is coded into a digital signal which eliminates error (c.2, lines 3-9). Further, Guers teaches that a power supply circuit including coils 17 rotating in front of magnets 18 can be used to feed a current to the signal transfer circuit winding 11 (c.2, lines 15-19; c.3, lines 8-19).

It would have been obvious to modify Fatula and provide a sensor with an associated signal transfer circuit per Guers since this would have been desirable to provide an image of a sensed physical magnitude and a means for transmitting this image in a rotating system with reduced error.

Regarding claim 4, note the embodiment of the transmission circuit shown in Fig.7 of Guers and including stationary and rotating coils 40/41 and cores (inherent) which behave like a rotary transformer (c.3, lines 52-59).

Regarding claim 5, as seen in Fig.1 of Guers, signal transfer coil 6 is wound around yoke 11, with the probe 8 provided at the fixed shaft and facing the coil to detect changes in a magnetic force therein.

Regarding claim 8, note roller bearings 3 between the rotating inner and fixed outer shafts 2 and 1 in Guers.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fatula and Guers as applied to claim 1 above, and further in view of Rawski (US 4,958,904). Fatula and Guers do not teach an optical system for the transfer circuit.

Rawski teaches an optical slip ring with a signal transfer circuit comprising a light emitting element 105 provided at rotary shaft 102 to emit light according to a signal, and a light receiving element 44 provided at a fixed shaft 12 facing said light emitting element to receive light from said light emitting element (Fig.1).

It would have been obvious to one of ordinary skill at the time of the invention to modify Fatula and Guers and provide an optical slip ring system per Rawski since an optical system reduces signal-to-noise ratios and higher frequency signals may be employed (Rawski, c.6, lines 5-23).

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merklein et al. (US 5,969,518) in view of French et al. (US 6,161,962). Merklein teaches a bearing with a speed measuring, pulse generator ring 3 and a noncontact signal transfer mechanism transmitting a signal from a rotary shaft (inner bearing ring 1) to a fixed shaft (outer bearing ring 2) comprising a signal transfer circuit configured to transfer a signal from said rotary shaft to said fixed shaft, wherein said signal transfer circuit comprises a transmission circuit 8 (Fig.3) provided at said rotary shaft 1 to transmit a signal by radio waves (c.3, lines 23-40), and a reception circuit 9 provided at said fixed shaft 2 to receive a signal transmitted from said transmission circuit.

Merklein does not teach "a power generation circuit generating power between said rotary shaft and said fixed shaft," with the signal transfer circuit "configured to be responsive to the power generated by said power generation circuit".

French teaches a bearing (A) with a noncontact signal transfer mechanism transmitting a signal from a rotary shaft 4 to a fixed shaft (outer race 42) comprising a power generation circuit generating power between said rotary shaft and said fixed shaft formed by a speed sensor 110 (part of sensor B) whose rotating target wheel 118 functions as an electrical generator, to supply power to a radio transmitter 124. The target wheel 118 induces an electrical current in a coil within the sensor 110. The speed-sensor/power-generation-circuit is necessary to supply energy to the radio transmitter since it requires electrical energy (c.6, line 34) and because a battery 128 only has finite capacity and needs to be recharged (c.6, lines 49-52 & 61-62).

It would have been obvious to one having ordinary skill in the art to modify Merklein and use speed sensor as a power generation circuit for the radio transmitter per French since a radio transmitter requires electrical power and since the speed sensor would have been a desirable way to generate such power necessary for operating the radio transmitter.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 4-6 and 8-9 have been considered but are moot in view of the new ground(s) of rejection.
6. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims. The prior art does not teach the claimed signal transfer mechanism including radio transmission and reception circuits on the rotary and fixed shafts as claimed in claim 7. Guers mentions that contactless, radio-wave electrical transmission is known in rotating sensor systems; however, Guers states that such a system is bulky and costly (c.1, lines 20-29). Hence, there would appear to be no motivation to combine such a radio transmission circuit with Guers and Fatula since Guers specifically teaches away from the combination.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The


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examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.


Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
May 27, 2003